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NOTES ON GEOGRAPHIC DISTRIBUTION

Pisces, Teleostei, Characiformes, Characidae, *Hasemania crenuchoides* Zarske and Géry, 1999, *Hyphessobrycon balbus* Myers, 1927 and *Oligosarcus planaltinae* Menezes and Géry, 1983: New records in Distrito Federal, Central Brazil

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ABSTRACT: Herein we present new records of three freshwater fish species (*Hasemania crenuchoides*, *Hyphessobrycon balbus* and *Oligosarcus planaltinae*) considered restricted to Central Brazil and previously known only for the upper Rio São Bartolomeu sub-basin. Our data expand their range to other sub-basins in the Distrito Federal, including Sobradinho, Bananal, Santa Maria-Torto, Gama and Ribeirão Santana sub-basins.

The Federal District is comprised of the headwaters of major river basins in Brazil, namely the Tocantins, Paraná and São Francisco (Barros 1993). These headwaters have fish assemblages characterized by small species and high endemism (Castro 1999). Nogueira *et al*. (2010) identified 540 Brazilian watersheds containing 819 restricted-range freshwater fish species, from which seven occur in Central Brazil, Distrito Federal (Table 1).

Our recent collections extends the distribution of three of these seven species (*Hasemania crenuchoides* Zarske and Géry, 1999, *Hyphessobrycon balbus* Myers, 1927 and *Oligosarcus planaltinae* Menezes and Géry, 1983) that were known only from the upper Rio São Bartolomeu sub-basin, in the upper Paraná basin, Distrito Federal (Buckup *et al.* 2007; Nogueira *et al.* 2010). Previous records for *H. crenuchoides* (Figure 1A) are from its type locality; however we collected new specimens at Rio Paranoazinho headwaters, located in the Sobradinho sub-basin, upper Paraná basin (Figure 2). New records of *H. balbus* (Figure 1B) expand its distribution to the Bananal, Santa Maria-Torto and Gama sub-basins, all belonging to the headwaters of the upper Paraná basin. These new localities are within two Conservation Units of Integral Protection; the Parque Nacional de Brasília, and Estação Ecológica da Universidade de Brasília (Figure 2). Finally, we recorded *O. planaltinae* (Figure 1C) to Ribeirão Santana sub-basin, also in the upper Paraná basin (Figure 2).

Despite the new records reported here, we stress that the total area of all sub-basins does not exceed 10,000 km^2, which is the maximum size of a basin needed for considering fish species as restricted-range (see Nogueira *et al.* 2010). Thus, the focus of research and preservation of these species and their habitats shows significant, mainly due to the use and disordered human occupation in these

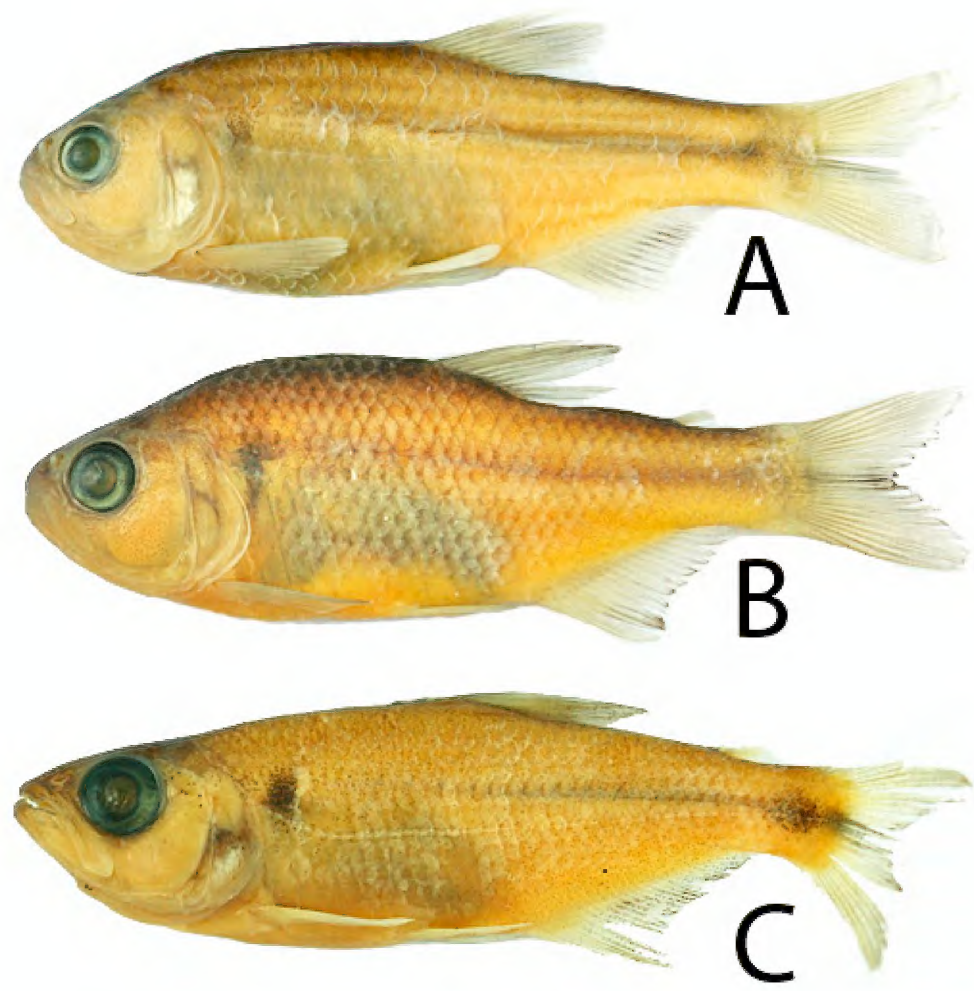

FIGURE 1. A) *Hasemania crenuchoides* (42.13 mm standard length, voucher CIUnB 361), B) *Hyphessobrycon balbus* (46.38 mm standard length, voucher CIUnB 5) and C) *Oligosarcus planaltinae* (45.79 mm standard length, voucher CIUnB 267).

environments (Allan and Flecker 1993; Magurran 2009). However, new records in protected areas may reveal that these species may be efficiently protected at least in part of their restricted ranges.

Other species also considered of limited distribution in the Distrito Federal such as *Simpsonichthys boitonei* Carvalho, 1959 and *Simpsonichthys santanae* (Shibata and

Garavello, 1992), were not recorded and are still known from much localized records, despite recent collecting efforts in the region. Nevertheless, we do not disregard the possibility of acquiring new distribution records for those species in areas that were not sampled yet. Further studies are necessary to understand the range of narrow endemic fish species in headwater catchment areas around Brasília, an area of contact between distinct freshwater fish faunas.

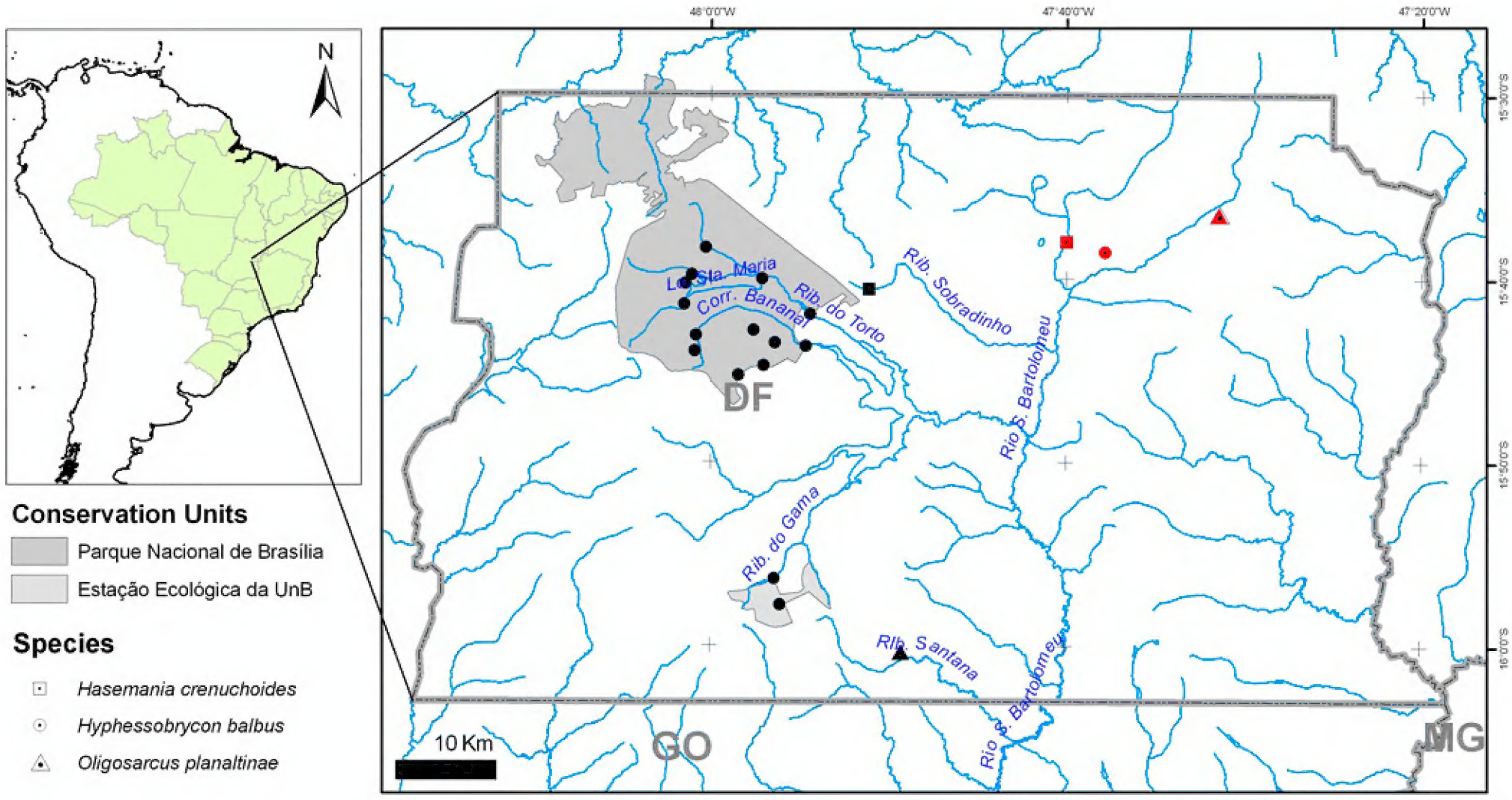

Figure 2. Map showing the occurrence of *Hasemania crenuchoides*, *Hyphessobrycon balbus* e *Oligosarcus planaltinae* in headwaters of the Upper Paraná basin, Distrito Federal (DF), Central Brazil. Red symbols denote previously known geographic distribution and dark symbols denote currents records.

Table 1. Restricted-range freshwater fishes of the Distrito Federal, in Central Brazil (Supporting Information, Table S1 in Nogueira *et al.* 2010).

SPECIES	SUB-BASIN
CHARACIFORMES	
Characidae	
Hasemania crenuchoides Zarske and Géry, 1999	Upper Rio São Bartolomeu
Hyphessobrycon balbus Myers, 1927	Upper Rio São Bartolomeu
Hyphessobrycon coelestinus Myers, 1929	Upper Rio São Bartolomeu
Oligosarcus planaltinae Menezes and Géry, 1983	Upper Rio São Bartolomeu
SILURIFORMES	
Heptapteridae	
Phenacorhamdia unifasciata Britski, 1993	Ribeirão Santana
CYPRINODONTIFORMES	
Rivulidae	
Simpsonichyhys boitonei Carvalho, 1959	Ribeirão do Gama and Riacho Fundo
Simpsonichthys santanae (Shibata and Garavello, 1992)	Ribeirão Santana

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Appendix I. Vouchers of the species deposited in the Coleção Ictiológica da Universidade de Brasília (CIUnB) and Coleção de Peixes do Departamento de Zoologia e Botânica da Universidade Estadual Paulista, São José do Rio Preto (DZSJRP).

Hasemania crenuchoides CIUnB 361; *Hyphessobrycon balbus* CIUnB 5, 9, 23, 30, 53, 58, 65, 170, 190, 215, 231, 235, 239, 242, 309-311, 313-317, 319, 321-337, DZSJRP 10818, 10825; *Oligosarcus planaltinae* CIUnB 267, 278, DZSJRP 10806.